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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,158

06/07/2007

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2004P01759WOUS

6958

24131 7590 12/06/2011
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EXAMINER

AKRAM, IMRAN

ART UNIT

PAPER NUMBER

1723

MAIL DATE

DELIVERY MODE

12/06/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,158	Applicant(s) SEEMANN ET AL.	
	Examiner IMRAN AKRAM	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2011.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 9-22 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 9-22 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/21/11 have been fully considered but they are not persuasive. The reference rejections still apply.
2. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Applicant's assertion that the feedstock of Broecker is completely different than that of the current claims does not take into account the combination of Broecker with Applicant's admitted prior art. The rejection of claim 1 makes use of biomass gasification effluent as the initial feedstock.
3. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., page 3 of the Rule 132 declaration) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). The concentrations of tar in the Affidavit have no bearing to the current claims as the claims do not claim any concentrations for tar.
4. Applicant asserts that "the gas compositions of Broecker which go into the methanization reaction are absolutely free of C2 components and aromatic hydrocarbons" is without evidentiary basis. Applicant is requested to provide detail

Art Unit: 1723

about how minor amounts of C2 and aromatic compounds would not be in the effluent of Broecker. Applicant does not claim any specific amounts of C2 or aromatic compounds beyond stating "in the range of less than 10 vol%." PPB would thus satisfy this requirement. Applicant is suggested to claim the minimum amount of C2 or aromatic compounds in the feedstock.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 1723

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 9-20 and 22-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Child (US 3,928,000) in view of Broecker (3,912,775) and Applicant's admitted prior art.

9. Regarding claims 9-20 and 22, Child discloses providing a syngas comprising CH₄, H₂, CO₂, CO, and steam with an H₂/CO mole ratio of 1.0-2.5 (column 3, lines 57-63), contacting the syngas with fluidized bed comprising catalyst particles at 20 to 1000 microns at 315 to 815°C, 1 atm (~1 bar), a space velocity of 80 to 10,000 per hour, and a residence time of 0.5 to 10 seconds (column 6, lines 1-24). The catalyst bed comprises 33 to 78 weight percent nickel oxide on an alumina base (column 7, lines 41-47). Filtering the feedstock with activated carbon is not a necessary step in Child (column 6, lines 51-54). Child does not disclose the use of biomass, C₂, or aromatic hydrocarbons in the feed gas mixture (syngas), however. Applicant, on lines 21-37 of page 2 of the instant specification, discloses the prevalence of aromatics and C₂ components in the effluent of biomass gasification and their deleterious effect on methanation. Broecker—in an invention for the production of methane from syngas—discloses that the feed gas mixture can contain aromatic hydrocarbons of up to 20% depending on the feedstock desired (column 3, line 57 to column 4, line 2) and unsaturated and aromatic compounds in the range of 1 to 10% by volume (column 11,

Art Unit: 1723

lines 60-66). Broecker discloses cracking the feedstock before sending it a methanation reactor, eliminating most of the C₂ and aromatics, but discloses the deleterious effects of nitrogen, something the invention of Child does not possess. It would have been obvious to one having ordinary skill in the art at the time of invention to use the methanation reaction of Child with the feedstock of Broecker to methanate the feedstock of Broecker without having to remove the nitrogen components and to use the output of biomass gasification as it would mostly eliminate the deleterious aromatics and C₂ components without having to remove sulfur to achieve maximum methane production as suggested by Applicant.

10. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Child '000 and Broecker as applied to claim 9 above, and further in view of Child '113 (US 3,890,113)

11. Neither Child '000 nor Broecker discloses the use of benzene or toluene. Child '113—in an invention for the production of methane from produced syngas—discloses that benzene and toluene are common feedstock starting materials (column 2, line 66-68). It would have been obvious to one having ordinary skill in the art at the time of invention for the aromatics of Child '000 and Broecker to be toluene and benzene as these are common feedstocks for methanation as shown in Child '113.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IMRAN AKRAM whose telephone number is (571)270-3241. The examiner can normally be reached on 10-7 Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Imran Akram/
Primary Examiner, Art Unit 1723